

Claims

I claim:

Sub A'

1. A multi-point sliding door latch adapted to be fitted in a single opening in the lock face of the stile of the door and arranged for coaction with a keeper structure on an associated jamb and for coaction with a handle assembly mounted on the stile of the door and including a tail member operated by a thumb turn or a key lock, the latch comprising:

10 a unitary hollow housing sized to fit in the stile opening;

a pair of vertically spaced upper and lower hooks each mounted in the housing for movement between a retracted, unlatched position within the hollow of the 15 housing and an extended, latched position extending out of the hollow of the housing for latching coaction with the keeper structure; and

actuator means positioned in the housing intermediate the upper and lower hooks, adapted to receive 20 a tail member from the handle assembly, and operative in response to turning movement of the tail member to move the upper and lower hooks in unison between their unlatched and latched positions.

25 2. A latch according to claim 1 wherein the hooks are pivotally mounted in the housing.

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2. A latch according to claim 1 wherein the hooks move in opposite directions about their respective pivot axes.

3. A latch according to claim 1 wherein the actuator means comprises upper and lower actuators positioned in vertically spaced side-by-side relation in the housing and each pivotally mounted in the housing, and the actuators are ganged together by a gang link so that pivotal movement of one actuator generates corresponding pivotal movement of the other actuator.

Sub A²
5. A latch according to claim 1 wherein the housing includes a sidewall and the sidewall defines upper and lower openings for passage of upper and lower fasteners utilized to attach the handle assembly to the stile of the door.

6. A latch according to claim 5 wherein the upper hole is positioned vertically between the actuator means and the upper hook and the lower hole is positioned vertically between the actuator means and the lower hook.

20 7. A latch according to claim 4 wherein the latch further includes an upper link interconnecting the upper actuator and the upper hook and a lower link interconnecting the lower actuator and the lower hook.

8. A latch according to claim 1 wherein:

the actuator means includes a pivot arm mounted at one end thereof for pivotal movement in the housing about a pivot axis and including a radially extending slot 5 provided at another end of the arm;

the housing defines an arcuate slot centered on the pivot axis and intersecting the pivot arm slot;

the latch further includes a pin passing through the housing and pin assembly slots and means operatively 10 connecting the pin to one of the hooks;

the housing further defines a tail end slot portion communicating with one end of the arcuate slot and extending inwardly therefrom toward the pivot axis; and

the latch further includes spring means biasing 15 the pivot arm for movement about the pivot axis in a direction to cause the pin to move inwardly into the tail end slot portion following movement of the pin to said one end of the arcuate slot.

Sub Q⁴

9. A latch according to claim 8 wherein the 20 operatively connecting means comprises a link connected at one end thereof to the pin and pivotally connected at another end thereof to said one hook.

10. A multi-point sliding door latch adapted to be fitted in a single opening in the lock face of the stile 25 of the door and arranged for coaction with a keeper structure on an associated jamb and for coaction with a

handle assembly mounted on the stile of the door and including a tail member operated by a thumb turn or a key lock, the latch comprising:

a unitary hollow housing sized to fit in the
5 stile opening;

a pair of vertically spaced upper and lower hooks each pivotally mounted in the housing for movement between a retracted, unlatched position within the hollow of the housing and an extended, latched position extending out of
10 the hollow of the housing for latching coaction with the keeper structure;

upper and lower actuators pivotally mounted in the housing in vertically spaced side-by-side relation between the upper and lower hooks and each adapted to
15 receive a tail member from the handle assembly;

a gang link connecting the upper and lower actuators so that pivotal movement of one actuator generates corresponding pivotal movement of the other actuator;

20 an upper link interconnecting the upper actuator and the upper hook; and

a lower link interconnecting the lower actuator and the lower hook.

11. A latch according to claim 10 wherein the
25 housing includes a sidewall and the sidewall defines upper and lower openings for passage of upper and lower fasteners

utilized to attach the handle assembly to the stile of the door.

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12. A latch according to claim 11 wherein the upper hole is positioned vertically between the actuator means and the upper hook and the lower hole is positioned vertically between the actuator means and the lower hook.

13. A latch according to claim 10 wherein:
the upper and lower actuators respectively comprise upper and lower pivot arms, each mounted at one end thereof for pivotal movement in the housing about a pivot axis and each including a radially extending slot provided at another end of the arm;

the housing defines upper and lower arcuate slots, each centered on the pivot axis of a respective upper and lower pivot arm and each intersecting the radially extending slot of the respective pivot arm;

the latch further includes an upper pin mounted on the lower end of the upper link and passing through the upper arcuate slot and the upper pivot arm slot and a lower pin mounted on the upper end of the lower link and passing through the lower arcuate slot and the lower pivot arm slot;

each arcuate slot further defines a tail end slot portion communicating with one end of the respective arcuate slot and extending inwardly therefrom toward the pivot axis of the respective pivot arm; and

the latch further includes spring means biasing each pivot arm for movement about its pivot axis in a direction to cause the respective pin to move inwardly into the tail end slot portion of the respective arcuate slot
5 following movement of the pin to said one end of the respective arcuate slot.

Sub Q^b

14. A multi-point sliding door latch and handle assembly adapted to be fitted on the stile of the door, comprising:

10 a unitary hollow housing sized to fit in an opening in the lock face of the stile and including a sidewall defining upper and lower holes providing access to the hollow interior of the housing;

a pair of vertically spaced upper and lower hooks-
15 each mounted in the housing for movement between a retracted, unlatched position within the hollow of the housing and an extended latched position extending out of the hollow of the housing for latching coaction with a keeper structure on an associated jamb;

20 actuator means positioned in the housing intermediate the upper and lower hooks, adapted to receive a tail member, and operative in response to movement of the tail member to move the upper and lower hooks in unison between their unlatched and latched positions; and

25 a handle assembly including an escutcheon plate adapted to be mounted on the stile of the door, a handle mounted on the escutcheon plate, a latch actuator device

mounted on the escutcheon plate and including a tail member adapted to extend through an aperture in the stile for receipt by the actuator member, and upper and lower fastener members extending through upper and lower holes in 5 the escutcheon plate, through the stile, and through the upper and lower holes in the housing sidewall.

15. A multi-point sliding door latch and handle assembly according to claim 14 wherein:

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10 the upper hook is positioned in the housing above the upper housing sidewall hole;

the lower hook is positioned in the housing below the lower housing sidewall hole; and

the actuator means are positioned in the housing between the upper and lower housing sidewall holes.

15 16. A multi-point sliding door latch and handle assembly according to claim 14 wherein the hooks are pivotally mounted in the housing, move in opposite directions about their respective pivot axes, and open toward each other in their latched positions.

20 17. A multi-point sliding door latch and handle assembly according to claim 14 wherein the actuator means comprises upper and lower actuators positioned in vertically spaced side-by-side relation in the housing and each pivotally mounted in the housing, and the actuators 25 are ganged together by a gang link so that pivotal movement

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~~of one actuator generates corresponding pivotal movement of the other actuator.~~

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~~18.~~ A multi-point sliding door latch and handle assembly according to claim ~~17~~¹⁸ wherein the assembly further includes an upper link interconnecting the upper actuator and the upper hook and a lower link interconnecting the lower actuator and the lower hook.

add Q³, Q⁵, Q⁷

